

## CHEMICAL TREATMENT OF SEMICONDUCTOR SUBSTRATES

### Abstract of the Disclosure

A method is disclosed for removing liquids from a semiconductor substrate by contacting the liquid on the substrate with a liquid which attracts the liquid on the substrate, separating the liquids from the substrate, and inducing a phase transition in a layer on the substrate. In particular, the method is applicable to removing water from a water-containing layer on the substrate by contacting the layer with a hygroscopic liquid. Trenches on a substrate can be isolated by filling the trenches with a water-containing gel formed by reacting silane and hydrogen peroxide. The gel is contacted with sulfuric acid to remove a portion of the water from the gel before annealing to form silica in the trenches. Unlike filled trenches formed by conventional technology, there are no voids in the bottom of the trenches. The method is also applicable to forming dielectric layers which cover metal lines, low-dielectric layers, and interlayer dielectric layers. The liquid may be applied to the substrate by chemical vapor deposition or by spin-applying.

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